## *K. anderssoni*

### Lourenco et al. 2017

* High level predator (TL = 3.8)
  + Diet of copepods, but preferential feeding on *Thysanoessa* spp. (euphausid).
  + Selective predator.
* Temperature -0.2-4C
* Northern Scotia Sea – south of Antarctic Polar Front.
  + Circumpolar deep water.
* Below 400m during the day.
  + Density maxima 400-700m.
* Some stayed between 0-200m.
  + Daytime schooling, by juveniles in warm, food rich layers.

|  |  |  |
| --- | --- | --- |
|  | Day | Night |
| Spring | >400 | 201-400 |
| Summer | >400 | 401-700 |
| Autumn | >400 | 701-1000 |

* Evidence for DVM.
* Most likely spawns in winter.
  + Aggregation at depth in autumn.
* 3-year life cycle.

### Collins et al. 2012

* Mostly caught deeper than 200m in Scotia Sea.
* Wide range of sizes caught in Scotia Sea.
* More caught in North.

### Collins et al. 2008

* Day distribution 100-1000m.
* Night distribution 10-1000m.
* No significant size difference between males and females.
* Multi-modal size distribution.
* Did do DVM.
* Completes lifecycle in Scotia Sea.

### Saunders et al. 2013

* Form schools.

### Torres & Somero 1988b

* DVM

### Piatkowski et al. 1994

|  |  |  |
| --- | --- | --- |
|  | Day | Night |
| Scotia Sea | 0-1000 | 200-1000 |
| South Georgia | 0-1000 | 0-1000 |

* DVM
* Similar biomass across stations.

### Gon & Heemstra 1990

* Broadly Antarctic
* Below 32S
* Max depth 1000m
* Upper temperature 2.6-5.6C
* Euphausiid and copepod diet

### Misc

* Well-developed swimbladder.

## *P. bolini*

### Saunders et al. 2015

* Dominant Protomyctophum.
* Throught Scotia Sea – mostly in the North Scotia Sea.
* 2-year lifespan.
  + Recruitment in North.
* Diet dominated by copepods.

|  |  |  |
| --- | --- | --- |
|  | Day | Night |
| Spring | 201-700 | 201-400 |
| Summer | 201-700 | 201-400 |
| Autumn | 201-700 | 201-400 |

* Lower nighttime distribution than other Protomyctophum.
* Some evidence of DVM.

### Collins et al. 2012

* Mostly caught between 200-400m in Scotia Sea.
* Only adults caught in Scotia Sea.
* More caught in North.
* May be intolerant to waters below 1.5C.

### Collins et al. 2008

* Day distribution 150-1000m.
* Night distribution 10-1000m.
* No significant size difference between males and females.
* Unimodal size distribution.
* Didn’t appear to DVM.
* Adults migrate into Scotia Sea, but juveniles stay further north.

### Pusch et al. 2004

* 273-825m, but mostly shallow between 273-450m.
* Diet dominated by copepods.

### Torres & Somero 1988b

* DVM

### Piatkowski et al. 1994

|  |  |  |
| --- | --- | --- |
|  | Day | Night |
| Scotia Sea | 200-800 | 0-800 |
| South Georgia | 0-800 | 0-600 |

* DVM
* Similar biomass across stations.

### Gon & Heemsta 1990

* 608-728 (day) 364-426 (night).
* Intramuscular lipid storage.
* Below STC.
* Diet of copepods.

### Misc

* Primarily feds on *Metridia* spp. (copepod).
* Warmer water, cosmopolitan.
* Spawns in spring.
* Well-developed swim bladder.
* Sub-antarctic species who’s adults migrate in.
* Migrates vertically over a restricted range.
  + Some of the population stays in upper 400m during daylight.

## *E. carlsbergi*

### Saunders et al. 2014

* North Scotia Sea.
  + Not south of the Antarctic Polar Front.
  + Antarctic Surface Waters, Winter Water and Circumpolar Deep Water.

|  |  |  |
| --- | --- | --- |
|  | Day | Night |
| Spring | >400 | 0-200 |
| Summer | >400 | 0-400 |
| Autumn | >400 | 201-400 |

* Diet dominated by copepods especially *R. gigas.*
* Sub-Antarctic species.
  + May be an expatriate species or may spawn elsewhere.
  + Recruitment inhibited in Scotia Sea.
* Forms dense schools.
* No evidence in this paper of DVM.
* Larger fish caught deeper.

### Collins et al. 2012

* Mostly confined to upper 400m in Scotia Sea.
* Only adult caught in Scotia Sea.
* More caught in North.
* Associated with Polar Front warm water eddies.

### Collins et al. 2008

* Day distribution 20-1000m.
* Night distribution 10-1000m.
* Females significantly larger.
* Unimodal size distribution.
* Didn’t appear to do DVM.
  + Has been reported to DVM in the summer.
* Adults migrate into Scotia Sea, but juveniles stay further north.

### Saunders et al. 2013

* Form schools.

### Piatkowski et al. 1994

|  |  |  |
| --- | --- | --- |
|  | Day | Night |
| Scotia Sea | 600-800 | 0-800 |
| South Georgia | 0-600 | 200-600 |

* Greater biomass at South Georgia than Scotia Sea.

### Kozlov et al. 1991

* Forms regular concentrations.
* Occurs between 49-54S.

|  |  |  |
| --- | --- | --- |
|  | Day | Night |
| Spring | 100-450 | 100-450 |
| Summer | 160-200 | 10-100 |
| Autumn | 200-400 | 200-400 |
| Winter | 200-400 | 200-400 |

* DVM weak in the spring and autumn – irregular DVM.
  + Most pronounced in the summer.

### Gon & Heemstra 1990

* Between APF and STC – South Temperate
* 50-58S
  + More norther boundary of southern ocean.
* Shoaling
* DVM: 80-140m to surface.
* Females slightly bbigger than males.
* Feeds on copepods, hyperiids and euphausiids.

### Misc

* Above 400m.
* Warmer water, cosmopolitan.
* Well developed swim bladder.
* Sub-antarctic species who’s adults migrate in.

## *E. Antarctica*

### Saunders et al. 2014

* South Scotia Sea – south of the Antarctic Polar Front.
  + Antarctic Surface Waters, Winter Water and Circumpolar Deep Water.
* Wide nighttime distribution (0-1000m).

|  |  |  |
| --- | --- | --- |
|  | Day | Night |
| Spring | 701-1000 | 201-400 |
| Summer | 401-700 | 401-700 |
| Autumn | >400 | 0-200 |

* Broad diet.
  + Mostly *E. superba,* but also amphipods and copepods.
* Larger fish caught deeper.
* Spawning in autumn/winter.

### Collins et al. 2012

* All sizes caught in Scotia Sea.
* Dominant in cooler waters.

### Collins et al. 2008

* Day distribution 200-1000m.
* Night distribution 10-1000m.
* Females significantly larger than males.
  + Females occur deeper.
* Multimodal size distribution.
* Completes lifecycle in Scotia Sea.

### Pusch et al. 2004

* Mostly found below 400m depth.
* High abundance in deep stations.
* Diet dominated by euphausiids.
  + Low feeding intensity.

### Torres & Somero 1988b

* DVM

### Piatkowski et al. 1994

|  |  |  |
| --- | --- | --- |
|  | Day | Night |
| Scotia Sea | 200-1000 | 0-1000 |
| South Georgia | 0-1000 | 0-1000 |

* DVM
* Greater biomass at Scotia Sea than South Georgia

### Gon & Heemstra 1990

* South of APF - Antarctic
* Larvae throughout Scotia Sea
* Upper limiting temperature 3C
* 2000m maximum depth
* 3 year lifespan
* Adult diet primarily euphausiids
* Uses wax esters for buoyancy and energy stores.
* Females larger than males.

### Misc

* Small/residual swim bladder.
* Extensive vertical migrations.

## *G. braueri*

### Saunders et al. 2015

* Dominant Gymnoscopelus.
* Georgia Banks, Mid Scotia Sea and South Scotia Sea.
* Lifespan of at least 4 years.
  + May undertake ontogenetic migrations.
  + Large, long lived species.
* Broad diet, dominated by copepods but also with eupausiids.
* Broadly Antarctic.

|  |  |  |
| --- | --- | --- |
|  | Day | Night |
| Spring | >400 | 0-400 |
| Summer | >400 | 700 |
| Autumn | >400 | 700 |

* 0-1000m.
* Some DVM.
* Circumpolar deep water, winter water and Antarctic surface waters.

### Collins et al. 2012

* Wide range of sizes caught in Scotia Sea.
* Dominant in cooler waters.

### Collins et al. 2008

* Day distribution 60-1000m.
* Night distribution 10-1000m.
* Females significantly larger than males.
* Multimodal size distribution.
* Completes lifecycle in Scotia Sea.

### Pusch et al. 2004

* Found below 750m.
* High abundance in deep stations.
* Diet dominated by euphausiids.
  + Lowe feeding intestinty.

### Torres & Somero 1988b

* DVM

### Piatkowski et al. 1994

|  |  |  |
| --- | --- | --- |
|  | Day | Night |
| Scotia Sea | 400-1000 | 0-1000 |
| South Georgia | 400-1000 | 0-800 |

* DVM
* Greater biomass at Scotia sea than South Georgia

### Gon & Heemstra, 1990

* Below 33S
* Broadly Antarctic
* Upper limiting temperature 5-6C
* Diet of euphausiids, copepods and amphipods.

### Misc

* Small/residual swim bladder.
* Extensive vertical migrations.

## *G. nicholsi*

### Saunders et al. 2015

* Mid Scotia Sea and South Scotia Sea.
* Diet dominated by copepods but also with eupausiids.
* Broadly Antarctic.
  + Possible expatriate in Antarctic waters.
* Lifespan of 4 years.
* Larger body size than G. braueri.

|  |  |  |
| --- | --- | --- |
|  | Day | Night |
| Spring | 401-700 | 0-400 |
| Summer | 401-700 | 0-400 |
| Autumn | 401-700 | 0-700 |

### 0-700m.

### Collins et al. 2012

* More caught in North.

### Collins et al. 2008

* Day distribution 200-626.
* Night distribution 20-1000m.
* Completes lifecycle in Scotia Sea.

### Pusch et al. 2004

* Found over whole depth range (273-825m).
* Diet dominated by copepods and euphausiids.

### Piatkowski et al. 1994

|  |  |  |
| --- | --- | --- |
|  | Day | Night |
| Scotia Sea | 800-1000 | N/A |
| South Georgia | 0-600 | 0-200 |

### Gon & Heemstra, 1990

* Mesopelagic/epibenthic
* Broadly Antarctic
* Below 49S
  + Adults only at high lattitudes.
* Diet of euphausiids, hyperiids and mysids
* 700m max depth.

### Misc

* Above 400m.
* Lifespan of 7 years.
  + Higher growth rate than G. braueri.
  + May become benthopelagic in later life cycle.
* Small/residual swim bladder.